R. Michael Turnnspeed, Director

ALLEN BIAGGI. Administrator

(775) 687-4670
TDD 687-4678

Administration
Water Pollution Control
Facsimile 687-5856
Mining Regulations & Reclamation
Facsimile 684-5259

State of Nevada
KENNY C. GUINN
Governor

Waste Management
Corrective Actions
Federal Facilities

Air Quality
Water Quality Planning

Facsimile 687-6396

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138
Carson City, Nevada 89706

July 30, 2001

Mr. Douglas Bonham
Supervisory, Environmental Engineer
Naval Air Station Fallon
4755 Pasture Road
Fallon, NV 89496-5000

Re: Draft Final Comparison of Groundwater Alternatives Report – March 2001
Naval Air Station Fallon
Fallon, Nevada

Dear Mr. Bonham:

Nevada Division of Environmental Protection (NDEP) Bureau of Federal Facilities staff has reviewed the subject report. NDEP has the following comments concerning this draft report and requests that the Navy revisit the fundamental criteria used in the conceptual model, address these comments, and resubmit the document to NDEP as a revised draft for additional review and comment.

Comment No 1: Section 1.1 Purpose and Objective: Based on the information provided, a limited number of potential alternatives were compared to the Intrinsic Remediation Alternative. This Comparison of Groundwater Alternative (CGA) and the assessment of Intrinsic Remediation were initiated at the same time. A CGA is usually conducted well before field investigative work related to a particular remedial option has begun. NDEP is concerned that the remedial option of Intrinsic Remediation was pre-selected.

Comment No. 2: Section 3.1 NAS Fallon Conceptual Model: NDEP concurs that the potential for direct exposure to contaminated groundwater is low and the near surface groundwater is not

currently used for domestic purposes. The report indicates that the near surface groundwater in the vicinity of NAS-Fallon exceeds the NAC 445.22725
exemption for Total Dissolved Solids (TDS) of 10,000 mg/L. The TDS of the near surface aquifer has not been documented at the six sites and NDEP does not concur at this time that the near surface aquifer will not be a source of drinking water in the future. This section needs to be revised to indicate that it has been documented that some near surface groundwater in the Lahontan Valley area has exceeded the 10,000 mg/L TDS level and additional information will be collected to evaluate the TDS levels at these six sites.

Comment No. 3: Section 3.5 Site-Specific Point-of-Exposure (POE) and POC: NDEP does not concur with the Point of Compliance as defined in the report. The report defines the POC as being the location that the near surface groundwater becomes exposed at the drains or the base boundaries, which ever comes first. The POC is to be defined as the leading edge of the plume. The Navy needs to reevaluate the CGA based on this definition.

Comment No. 4: Section 3.6.2.1 Hydraulic Properties: The hydraulic conductivities used for the models were based on a limited number of slug and pumping tests that have been conducted by various contractors over the years. The CGA report indicated that a wide range of hydraulic conductivities (0.12 to 219 ft/day) exist across NAS Fallon. The models used a geometric mean calculated from all of the hydraulic tests. NDEP does not concur with facility wide averaging approach due to the range of site-specific conductivities. The Navy needs to revise the CGA using site-specific hydraulic properties for each of the six sites.

Comment No. 5: Section 3.7 Site-Specific Remedial Action Objectives: This section defines the remedial action objectives as

> *"…intended to ensure that groundwater contaminants at concentrations above the preliminary action levels do not reach the nearest potential Point of Exposure (POE)."*

As discussed in Comment No. 3, the Navy needs to reevaluate the CGA based on preventing the migration/expansion of the groundwater plumes.

Comment No. 6: Section 4. Development of Potential Remedial Alternatives: This section states:

> *"Since NAS Fallon has groundwater that is unsuitable for human consumption, a limited number of alternatives are developed on the basis of specific site conditions. The range of remedial alternatives developed for non-potable*
>
> *groundwater is usually relatively limited, and the evaluation is less extensive than for sites with current or potential sources of drinking water."*

NDEP does not concur with the interpretation that the groundwater at NAS-Fallon is unsuitable or that the remedial alternatives reviewed should have been limited. The Navy has not documented that the groundwater at the six sites is unsuitable. Due to the CGA's groundwater assumption, many existing remedial alternatives (co-metabolic, aeration, phytoremediation,

aeration, reactive treatment barriers/walls) and combinations of active and passive remedial alternatives were not considered. Combinations of active and passive remedial alternatives are commonly utilized. The active remedial alternative (air sparging, pump & treat) is typically smaller and used to address hot spots. The passive remedial alternative (reactive barriers, phytoremediation) is then applied to address the lower level concentrations over a longer period of time (i.e. air sparging – oxygenation – long term monitoring).

The document disqualified Air Sparging due to the heterogeneity of the site. Currently, air sparging is routinely used in Nevada at sites with similar heterogeneity. The Navy needs to revisit this potential remedial option.

Review of Remedial Alternatives 3, 4, 5, 7, & 8 indicate that they are all forms of pump and treat systems. These technologies are typically only applied to sites where other remedial technologies cannot address the groundwater contamination plume before it reaches a primary receptor (drinking well, stream, lake, etc). The evaluation of pump & treat remedial technologies are contradictory to NAS-Fallon position that these technologies are not cost effective.

Comment No. 7: 5.2 Establishment of POA Wells: NDEP concurs that site-specific Point of Action (POA) wells are required for each remediation plume/site. However, due to NDEP's position, the POA wells will be the same as the POC wells.

Comment No. 8: 5.9.7.3 Implementability of Alternative 6 – 14: This alternative includes the pumping and reinjection of untreated groundwater, which will require a permit from NDEP-Bureau of Water Pollution Control and NDEP's approval. It is unlikely that NDEP would concur with the injection of contaminated groundwater as part of a remedial strategy.

Comment No. 9: Table 6.1 – 6.6 Comparative Analysis of Remedial Alternatives: Based on NDEP's review of the Comparative Analyses for the site, the scoring does not appear to be consistent. The scoring scale appears to allow technologies that have measurable differences to receive the same rating. The Navy needs to provide additional information concerning the scoring criteria and re-evaluate the scoring rating based on the following concerns.

Examples from Table 6.1 Site 1

- Alternative 1 & 2 have different Effectiveness Scoring for the same site. Both alternatives are passive with no modification or additions to increase the natural attenuation. The only difference is the analysis conducted during the monitoring phases.
- Alternative 1 & 2 have the same Implementability rating as Alternatives 3, 4, 5, 6, 7 & 8. Alternatives 3 through 8 require the installation of remediation equipment and are considerably more difficult to implement verses the passive Alternatives 1 & 2.
- The Implementability rating for Alternatives 3, 4, 5, 6, & 7 are all the same. This indicates that either the installation of the systems is very similar or that the rating scale is inadequate.
- Alternative 6 received the same Implementability Rating (4) verses Alternatives 3, 4, 5, & 7. Alternative 6 requires specialized knowledge, more subsurface piping, transfer pumps, high level switches and numerous other components not required for the other Alternatives.

- Alternative 6, 7, and 8 cost column needs to be revised to indicate that Scenario 2 is 15 years of O&M not 30 years.

Due to the fundamental nature of NDEP's concerns, the Navy needs to provide a revised draft addressing the above comments. If you have any questions or comments, please feel free to contact me at (775) 687-4670, extension 3029 or email kscarbro@govmail.state.nv.us .

Sincerely,

Ken Scarbrough
Bureau of Federal Facilities

KS/js

cc: John Dirickson, NAS Fallon
Grace Bonham, NAS Fallon
Jim Brown, EFA Northwest, Naval Facilities Engineering Command
Bill Stephens, RAB Community Co-Chair
Karen Beckley, NDEP/BFF
Eric Noack, NDEP/BFF

Note: This letter is for electronic distribution. The original signed letter is on file at the address shown on the letterhead.